



Hehe Mine Ecological Park

Country / City	China/Taiian
University / School	Shandong Agricultural University/College of Forestry
Academic year	2019-2020
Title of the project	Planning and design of hehe Mine Ecological Park in Luanping, Chengde
Authors	Fangfang Cheng

TECHNICAL DOSSIER

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Authors	Fangfang Cheng
Title of the course	Landscape architecture planning
Academic year	2019-2020
Teaching Staff	Supervisor: Professor Hongtao Wang
Department/Section/Program of belonging	Department of Landscape Architecture
University/School	Shandong Agricultural University/College of Forestry



Written statement, short description of the project in English, no more than 250 words

The hehe mine ecological park is located at the top of Luanping Mountain in Chengde City, Hebei Province. The planned area is 13.2 hectares. The planned site is of complicated topography and can be divided into three parts. The northern part is a dumping ground, the central part is a pit escarpment, and the southern part is a pit mining area, the theme of the project is to take the ancient culture of Chengde, the industrial civilization of the mine industry, the cultural history of the Manchu nationality and the local folk art as design elements to improve the eco-environmental damage caused by climate change and over-exploitation of the mine in recent years, so that the mine green, forest regeneration, river features, create ecological restoration and natural experience blend, site memory and regional characteristics of the symbiosis of the characteristics of the mine park, the ultimate realization of human, animal and nature benefit from the ecological model.

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CLIMATE CHANGE AGAIN

11th International Biennial Landscape Barcelona

Barcelona September 2020
SCHOOL PRIZE

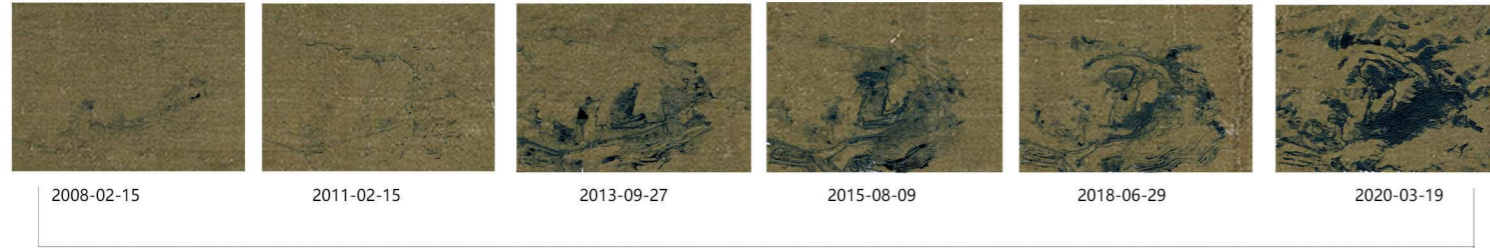
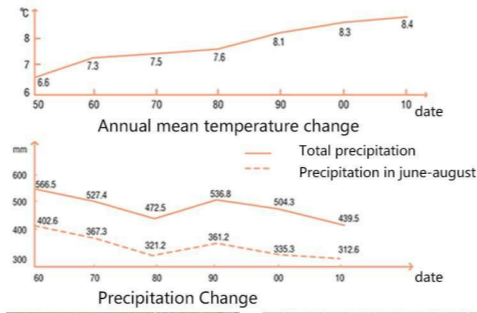


CLIMATIC ANALYSIS

Since the 20th century, with the acceleration of industrialization process, global changes, direct or indirect impact on the natural ecosystem, global warming and water shortage and other serious problems.

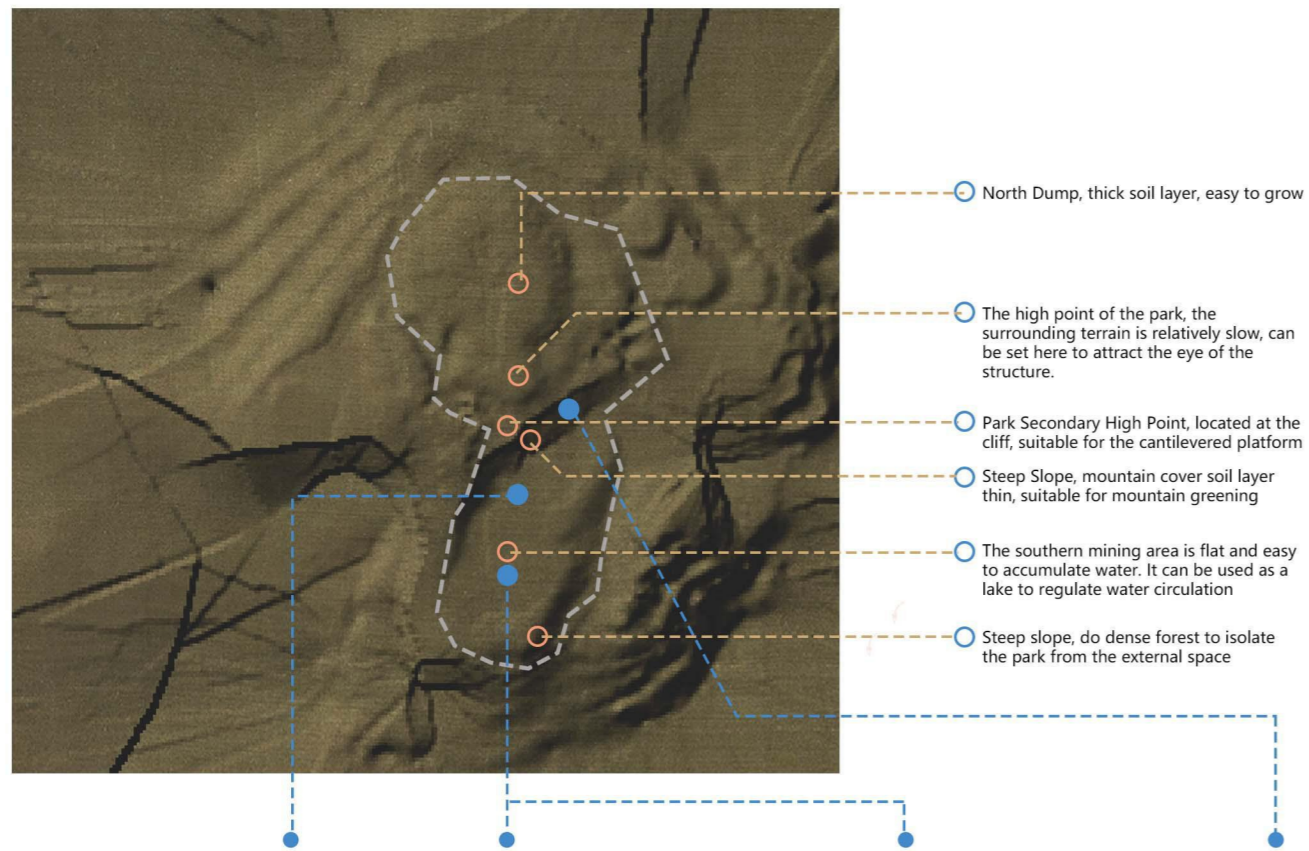
Average temperatures in Chengde have risen by 1.8 c over the past 60 years, with annual and June rainfall falling.

With the increase of air temperature, the decrease of precipitation and the over-mining of ore, the vegetation coverage around the mine is greatly reduced, and the ecological environment around the mine is seriously damaged.



Change of bare land area

TOPOGRAPHIC ANALYSIS



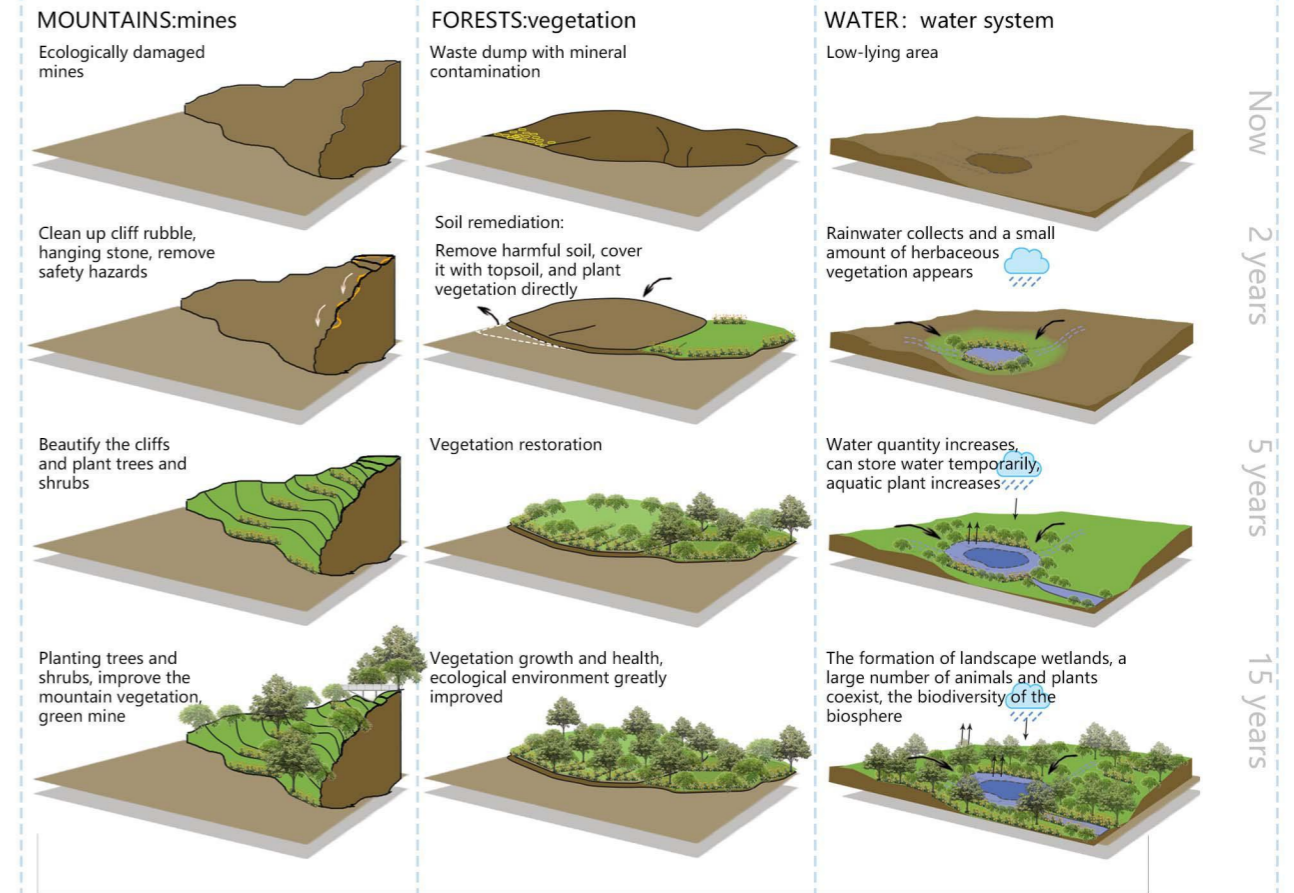
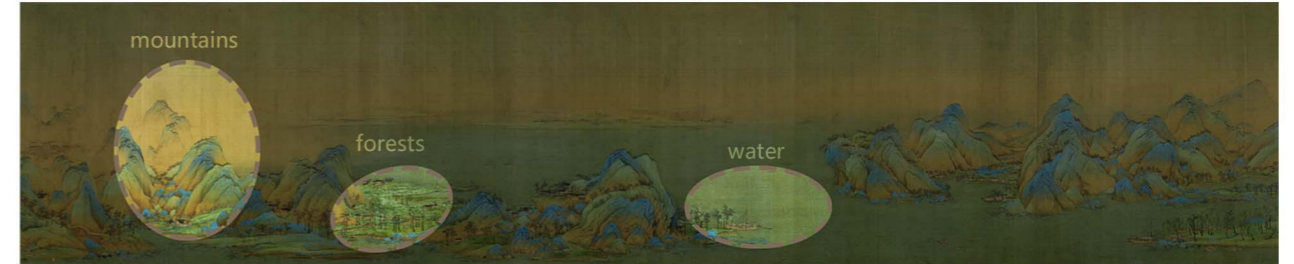
The site type of the quarry is mainly limestone, the surface hardness is bigger, the lower rock weathering is obvious, the broken limestone, the rock mass increases the instability of the pit

The long-term blasting mining has caused irreversible damage to the mountain structure and the original vegetation, the mine pit cliff is mostly loose and broken stone, the weathering is serious, there is the hidden danger of the landslide and the debris flow

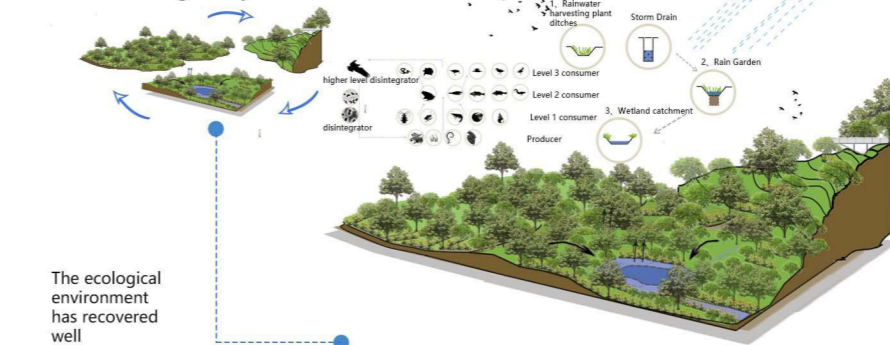
The soil quality of dump is loose and the nutrition is thin. In the south of the mine area, the present situation of the land is complicated, the whole water source is short, the planting vegetation is difficult to survive, the vegetation is difficult to repair

DESIGN IDEAS

Mountains represent mines, forests represent plants, water represents water systems, and clouds represent ecological cycles. Mountain, water and plant are the three elements of landscape, through the mine, vegetation, water system restoration, as well as the use of these elements to express before and after the transformation of the landscape evolution, to achieve the ultimate goal of ecological cycle.

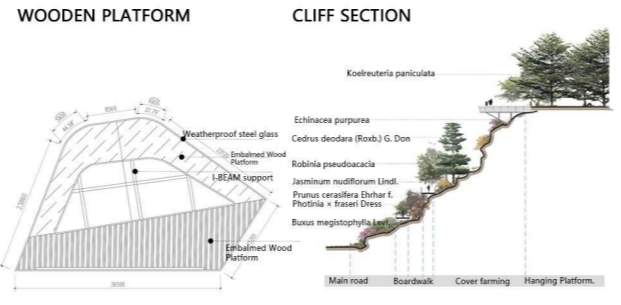


CLOUD: ecological cycle





Hehe Mine Ecological Park



The hanging platform is located on the high point of the mine cliff, collates the cliff and rubble, rises in a ladder, ensures the stability of the mountain, and reduces the damage in the process of climate change by cutting and filling.

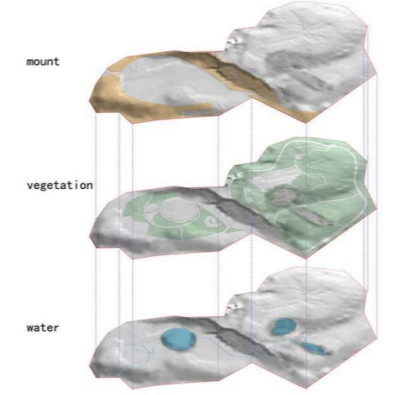


ELIMINATE SAFETY HAZARDS	DISPLAY MINE CULTURE	BEAUTIFY MINE CLIFFS	WATCH STRANGE STONES	EXPLORE MINE TREASURES
Cliff trimming				
Earthwork cleaning				

For the treatment of "Mountain" in the mine park, five methods are adopted in the main city. First, the hidden danger of safety is eliminated, the hanging stone and broken stone of the mountain body are removed, and landscape retaining walls are set up in the unstable area of the mountain body surface. Second, fully excavate the mine culture and show the historical process of mine development. Third, beautify the mountain body, you can take planting flowers and plants that are easy to grow, or you can do carving art on the cliff wall that has a better view of naked leakage. Fourth, you can show the unique landscape stone in the mine separately. Fifth, you can excavate the mineral treasure in the mine, to drive the economy.

LANDSCAPE LAYERING ANALYSIS

Mountains, plants and water systems are the landscape elements of landscape architecture. Through the interaction of mountains, plants and water, they form a complex biosphere and a stable ecological structure, which is more resistant to climate change.

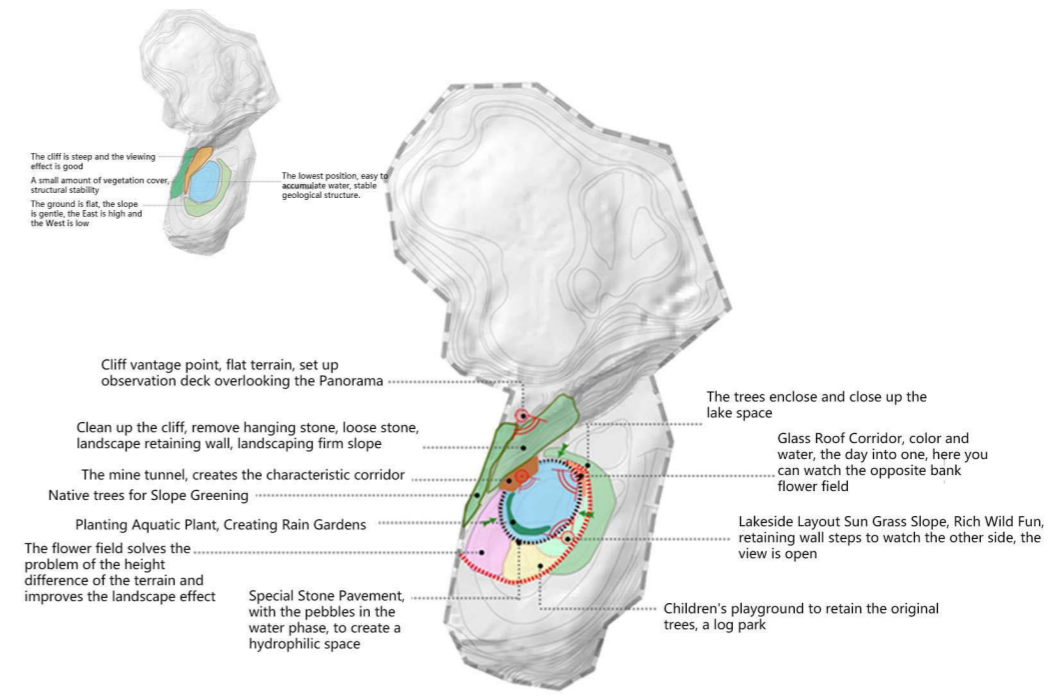


LANDSCAPE STRUCTURE

Different users have different expectations for the site landscape, children like vitality, interesting space; the elderly prefer quiet, comfortable, convenient space; for the natural ecological environment, more attention to health, circulation, vitality function. Park according to "dynamic", "quiet", "maintenance" functional zoning, respectively, entertainment dynamic activity area, quiet forest leisure area, mine ecological conservation area.



PLANNING THEORY OF MINING AREA



Including the southern mining area in the middle of the mine cliff, here positioning as "movement" and "support". In the middle part of the cliff, the maintenance is the main part, and appropriate tourist projects are set up to ensure the structural stability of the mountain. The South Mining area is mainly a dynamic paradise, through the connection of lake water, Dry Stream and round log paradise, it forms a set of activity place with Leisure and popular science, the two areas combine to make the function more complete and the ecological structure more stable.





VEGETATION RESTORATION

TAILING TREATMENT

EVOLUTION OF WATER ENVIRONMENT

The "vegetation" design of the mine park can be divided into three categories. The first is the treatment of tailings, which can turn the old tailings into valuable materials to obtain new value. The second is the land improvement, which can be carried out by two common methods: Using soil to cover the original ground, to add nutrients to the soil, you can use natural animal manure, the third vegetation restoration, planting process to pay attention to density.

Fill in the road foundation



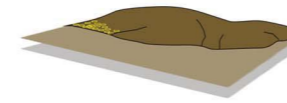
As building materials



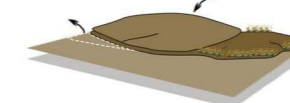
Filling Gob



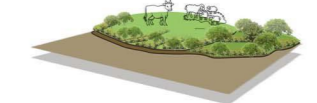
Existing dump



Remove harmful substances and cover with soil for planting



Animal and plant waste adds nutrients



Open Meadow



Dense forest



Stream dredging, Dry Stream

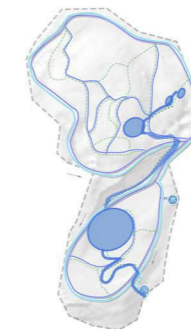
Rain Garden

Wetland landscape

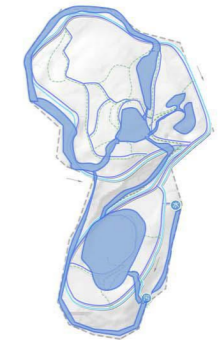


Layout of water supply and drainage network

- ① Sewage Treatment Plant
- ② Water Supply Department
- ③ Planning of sewage pipelines(DN100)
- ④ Water supply line planning(DN100)
- ⑤ Dry Creek drainage
- ⑥ Open ditch drainage
- ⑦ Drainage outlet



Water System in line



Water System in circular



Now



Ten years later



fifty years later

EVOLUTION OF WATER ENVIRONMENT



Above is the core landscape of the southern mining area, surrounded by a number of Jingxin Lake, colorful flower fields, round Wood Paradise, Sunny Grass Slope Festival. Multiple landscapes are interconnected to form a finished park system.

The water system design of the park includes the water supply and drainage pipelines, as well as the self-regulation ability of the park in the later stage, in response to the sudden increase in heavy rain or drought weather when the severe weather according to the amount of rainfall self-repair and become extreme weather special landscape. Through the water storage and filtration function of water resources, gradually close to the landscape of rain garden and wetland.